

WHAT IS CLAIMED IS:

- Sub A*
1. An information update count managing method, comprising:
a write step of writing pieces of information in a predetermined order in an information storage area including at least one WORD of a non-volatile memory, wherein information can be written to the non-volatile memory in a unit of WORDs, each WORD including a plurality of bits, and information can be erased from the non-volatile memory in a unit of sectors, each sector including a plurality of WORDs; and
a read step of reading out a last piece of information which has been written in the information storage area within a predetermined permitted update count.
 2. An information update count managing method according to claim 1, further comprising an erase step of erasing all of the BITS of all of the WORDs in the sector including the information storage area.
 3. An information update count managing method according to claim 1, further comprising an erase step of setting all of the BITS of all of the WORDs in each sector to "1".
 4. An information update count managing method according to claim 1, wherein the information storage area is provided in a same sector as an initialization operation program which is a first program to be executed after a reset.
 5. An information update count managing method according to claim 1, wherein the predetermined order is an ascending order of addresses of the WORDs.

6. An information update count managing method according to claim 1, wherein an upper limit value of the predetermined permitted update count is determined based on the number of WORDs in the information storage area.

7. An information update count managing method according to claim 1, wherein the pieces of information include regional information which is used for controlling a region where a content can be reproduced.

8. An information update count managing method according to claim 1, wherein:

the write step comprises a step of writing one or more of the plurality of BITS in the at least one WORD from "1" to "0"; and

the read step comprises a step of reading out, as the last piece of information which has been written in the information storage area within the predetermined permitted update count, a last hit WORD found in a search through the information storage area for WORDs in which at least one BIT is "0", the WORDs in the information storage area being searched through in the predetermined order.

9. An information update count managing method according to claim 1, wherein:

the write step comprises a step of writing one BIT in the at least one WORD from "1" to "0"; and

the read step comprises a step of determining the information of a WORD in which two or more bits are "0" to be invalid.

10. An information update count managing method according to claim 1, wherein the write step comprises a step of

storing, in an update count storage area, the number of times information has been written in the information storage area.

11. An information update count managing method according to claim 10, wherein the update count storage area is in the same sector as an initialization operation program which is a first program to be executed after a reset.

12. An information update count managing apparatus, comprising:

a non-volatile memory wherein information can be written to the non-volatile memory in a unit of WORDs, each WORD including a plurality of bits, and information can be erased from the non-volatile memory in a unit of sectors, each sector including a plurality of WORDs, and wherein the non-volatile memory comprises an information storage area including at least one WORD in a first sector of the non-volatile memory; and

a micro processor unit for writing pieces of information in a predetermined order in the WORDs of the information storage area and for reading out a last piece of information which has been written in the at least one WORD of the information storage area within a predetermined permitted update count.

13. An information update count managing apparatus according to claim 12, wherein the first sector includes a first program to be executed by the micro processor unit.

14. An information update count managing apparatus according to claim 12, wherein the predetermined order is based on addresses of the WORDs.

15. An information update count managing apparatus according to claim 12, wherein an upper limit value of the predetermined permitted update count is determined based on the number of WORDs in the information storage area.
16. An information update count managing apparatus according to claim 12, wherein the pieces of information include regional information which is used for controlling a region where a content can be reproduced.
17. An information update count managing apparatus according to claim 12, wherein the micro processor unit writes one or more of the plurality of BITS in the at least one WORD from "1" to "0", and reads out, as a last piece of information which has been written in the information storage area within the predetermined permitted update count, a last hit WORD found in a search through the information storage area for the at least one WORD in which at least one BIT is "0", the WORDs in the information storage area being searched through in the predetermined order.
18. An information update count managing apparatus according to claim 12, wherein the micro processor unit writes one BIT in the at least one WORD from "1" to "0", and determines the information of a WORD in which two or more bits are "0" to be invalid.
19. An information update count managing apparatus according to claim 12, wherein the non-volatile memory comprises an update count storage area for storing the number of times information has been written in the information storage area.

- DRAFT--2002-02-20
20. An information update count managing apparatus according to claim 19, wherein the update count storage area is in a same sector as an initialization operation program which is a first program to be executed by the micro processor unit.
 21. A contents usage count managing method, comprising:
 - a write step of writing a contents usage count in a contents usage count storage area including at least one WORD of a non-volatile memory, wherein information can be written to the non-volatile memory in a unit of WORDs, each WORD including a plurality of bits, and information can be erased from the non-volatile memory in a unit of sectors, each sector including a plurality of WORDs; and
 - a read step of searching for and reading out the contents usage count which has been written in the contents usage count storage area.
 22. A contents usage count managing method according to claim 21, wherein the contents usage count storage area of the non-volatile memory is in a sector which includes a first program to be executed after a reset.
 23. A contents usage count managing method according to claim 21, wherein the contents usage count is read out as the number of remaining times the content can be used.
 24. A contents usage count managing method according to claim 21, wherein the contents usage count is read out as the number of times the content has been used.
 25. A contents usage count storing apparatus, comprising:

a non-volatile memory wherein information can be written to the non-volatile memory in a unit of WORDs, each WORD including a plurality of bits, and information can be erased from the non-volatile memory in a unit of sectors, each sector including a plurality of WORDs, and wherein the non-volatile memory comprises a contents usage count storage area including at least one WORD in a first sector of the non-volatile memory; and

a micro processor unit for writing a contents usage count in the contents usage count storage area and for reading out the contents usage count which has been written in the contents usage count storage area.

26. A contents usage count storing apparatus according to claim 25, wherein the first sector of the non-volatile memory includes a first program to be executed by the micro processor unit.

27. A contents usage count storing apparatus according to claim 25, wherein the contents usage count is read out as the number of remaining times the content can be used.

28. A contents usage count storing apparatus according to claim 25, wherein the contents usage count is read out as the number of times the content has been used.

29. An information update count managing apparatus, comprising:

a non-volatile memory wherein information can be written to the non-volatile memory in a unit of WORDs, each WORD including a plurality of bits, and information can be erased from the non-volatile memory in a unit of sectors, each sector including a plurality of WORDs; and

SEARCHED SERIALIZED INDEXED FILED

a micro processor unit, wherein:
the non-volatile memory includes a boot area and a system area each including one or more sectors;
the boot area comprises an information storage area including at least one WORD;
a micro processor unit initialization program for initializing the micro processor unit is provided in the boot area; and
the micro processor unit writes pieces of information in a predetermined order in an information storage area in the unit of WORDS, and searches for and reads out a last piece of information which has been written in the information storage area within a predetermined permitted update count.

30. An information update count managing apparatus according to claim 29, wherein the boot area further comprises a check program for checking contents of the information storage area.

31. An information update count managing apparatus according to claim 30, wherein immediately after the micro processor unit is reset, the micro processor unit executes the micro processor unit initialization program and then the check program, and then the program stored in the system area.

32. An information update count managing apparatus according to claim 29, wherein the boot area further comprises I/F control means for receiving a program to be stored in the system area from an upper control unit which is connected to the information update count managing apparatus.

33. An information update count managing apparatus according to claim 29, wherein the boot area further comprises Flash Memory update means for updating a program in the system area.

34. An information update count managing apparatus according to claim 29, wherein immediately after the micro processor unit is reset, the micro processor unit executes the micro processor unit initialization program, and then waits for reception from the upper control unit which is connected to the information update count managing apparatus.

35. An information update count managing apparatus according to claim 29, wherein the micro processor unit calls a program in the boot area from a program in the system area.